Providing Health Services for the Homeless: A Stitch in Time

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For every hour and every moment thousands of men leave life on this earth, and their souls appear before God. And how many of them depart in solitude, unknown, sad, dejected, that no one mourns for them or even knows whether they have lived or not.

FYODOR DOSTOYEVSKY
THE BROTHERS KARAMAZOV

Inadequate shelter poses a threat to health and safety. Analyses of homeless persons in recent years[1–9] show that these individuals constitute a significant pool of illness.[10]

In this discussion we consider a process through which health care services can be designed, staffed, and offered at homeless shelter sites and we focus on an approach to helping those persons ill with the common chronic disorders of tuberculosis, high blood pressure, and human immunodeficiency virus (HIV) disease.

How Many Homeless Persons Are There? Who Are They?

Estimating the number of persons homeless at any given moment in the United States has become a game played between advocates who prefer higher figures and government officials who

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prefer lower. The number probably falls between 0.5 and 1.9 million.[11] Part of the discrepancy stems from inadequate definition of the meaning of the word "homeless." A demography of the homeless should include at least the following, with much overlapping:

- Skid row men (and a few woman).
- Patients discharged from state mental hospitals and prisons.
- Those newly homeless due to economic disaster.
- Runaway youths and those superannuated from foster care at age 18.
- Homeless women, often with children, many burnt or beaten out of their homes.
- Homeless families.
- The elderly homeless.

Certain subgroups are especially at risk. The elderly are strikingly vulnerable. According to demographic studies of more than 220,000 homeless persons examined at shelter clinics in 19 cities across the United States through the Robert Wood Johnson Foundation/Pew Charitable Trusts National Health Care for the Homeless Program (HCHP) from 1985 through 1989,[12] 3 to 4% are age 65 and older. This is a remarkable figure. About 12% are in that age group in the general population of our country. Why is the percentage of the elderly homeless so low? What happened to the remainder? As James Wright points out in his 1989 book, *Address Unknown: The Homeless in America*, the shortfall among the elderly homeless may be explained in part by the fact that a number of entitlements become available at age 65. These include Medicare and Social Security. These benefits may help some older persons leave the streets. Wright indicates, however, that premature mortality is likely as well. He notes: "Among 88 deaths occurring among clients seen in the HCHP, the average age of death was 51. Based on these findings, we can conclude that homeless men die some 20 or so years earlier than they should given normal life expectancies."[13,pp61–62] Although lack of shelter has a markedly harmful effect on human health, the elderly homeless are in double jeopardy.

Deinstitutionalization of the mentally ill has had an enormous influence on the numbers of homeless persons. The community

mental health movement,[14–16] civil rights advocacy, and the revolution in psychopharmacology all contributed to the development of a belief among policy makers that institutional care of the chronically mentally ill could be replaced by more humane models based in the community. The concept of deinstitutionalization was embraced by legislators as well, and by the mid-1960s federal law mandated the development of community mental health centers and initiated economic assistance to the psychiatrically disabled.[17] The development of a new philosophy of treatment coupled with sweeping public policy decisions set the stage for the return of large numbers of chronically ill patients to the community. In 1955 an estimated 560,000 people resided in psychiatric institutions, by 1981 this number had declined to about 132,000,[18] and by 1991 it had fallen further to 103,000 (unpublished data). The numbers also reflect the blocking of the road back to the state institutions, because state judicial and legislative decisions[19] have since made the process of involuntary commitment more arduous.

However, comprehensive community-based psychiatric and medical care has not been implemented for most discharged mentally ill patients and certainly does not meet their needs.[20] Of the 2000 community mental health centers proposed, only 800 were ever funded, often without providing the full range of clinical services required by law.[21] Community resistance and hostility often posed political obstacles to the establishment of proposed centers; patients became disaffiliated and beset with economic hardship as the result of inadequate subsidies from federal, state, and local sources.

Shifting the locus of care to the community was prompted by well-documented excesses and failures of the state hospital system; but, in the process, the important function of asylum was lost for those incapable of caring for themselves.[22–24] Reports from several urban centers suggest that the asylum function has been assumed in part by shelters for the homeless, which house large numbers of previously institutionalized patients, as well as the mentally ill who have eluded formal diagnosis and treatment.[25,26] The aberrant care-seeking behavior and withdrawal of many mentally ill persons,

whether a feature of their illness or a product of the institutional experience,[27] pose significant challenges to care providers. Irony abounds.[28, pp 7-8]

> Manhattan State Hospital on Ward's Island in New York City discharged many of its chronic patients to the streets during the past twenty years. It became an underutilized facility with empty buildings. At the same time the government of New York City lacked shelter space for a growing number of homeless persons. "Logic" prevailed, and the state leased the empty space to the city for a nominal sum. Now this city shelter, previously part of the state mental hospital system, houses in substantial number the same people who were previously wards of the state.[29]

The only essential distinction among those placed at the site today is that now they are labeled "homeless" rather than "mentally ill."

Access to Care

Health workers and patients must meet for care to be given. Many homeless do not seek attention at standard locations. For some, alientation, anger, anxiety, depression, or confusion create barriers. For others, treatment of disease has a lower priority than obtaining a meal, looking for housing, or hunting for work. Some homeless persons are so disabled by mental illness, alcoholism, or drug abuse that they cannot keep appointments. Lack of money for transportation to a clinic or hospital is also a barrier.

To be frank, many medical institutions and staff members do not welcome the homeless.[30–32] Hospitals and clinics must deal with financial considerations; in addition, some of the homeless are perceived to be objectionable patients because of their hygiene or conduct. As a result, they may find their only recourse to be a government-financed county or municipal institution, and usually the first contact is in an emergency room (ER), a situation often doomed to failure. Picture this hypothetical case:

A homeless woman is seen at a shelter by a social worker. The worker pleads with the patient to seek medical care for her edematous, red and weeping lower legs. The patient agrees and is given a bus token for transportation to the local emergency room. At the ER she is triaged by a nurse and asked to wait because she is, in truth, not an emergency case. Five hours later she is examined by a physician who tells her that she has bilateral cellulitis of the lower extremities. She is told to go home, keep her legs elevated and soaked with wet to dry compresses for a week, and then return to clinic for follow-up care. She is given a prescription for an antibiotic.

What is the reality? The patient has no home to go to, no bed to lie upon, no way to soak her legs, no money to purchase an antibiotic. Further, it is now too late in the day to secure a place to sleep for the night and too late for the evening meal at a shelter or food line.

The lesson: unless organized primary health care services are available at the shelter, genuine access to care for homeless persons is an unrealistic expectation.

Access to services for the homeless through a health care program has the following minimal requirements:

- Professional health workers—usually a physician-nurse-social worker team—placed where the homeless are and willing to engage actively in case finding at these sites.
- A hospital prepared to back up the program with a full set of services, including emergency room, clinics, psychiatric and medical inpatient care, laboratory and x-ray facilities, and a pharmacy.
- Care given without regard to ability to pay.
- Transportation to health service sites.
- Sensitivity training for staff members.[33]

Clinical Disorders

Infection is a representative health problem in homeless persons. All persons may be at risk of an infectious disorder. For the home-

less, however, the physical settings in which they may gather, such as large congregate shelters, allow the easy spread of disease vectors such as respiratory viruses, scabies and lice, and the tubercle bacillus. The physical deterioration that results from trauma, inadequate nourishment, exposure, and the inability to remain clean creates a bodily environment that allows infection to occur more easily.

Note this parallel between the situation of homeless persons in the United States now and that of slaves in the pre-Civil War South.

> The state of slave health depended not only on disease immunities and susceptibilities but also on living and working conditions. In the latter two matters, the South stood apart from the rest of the nation. Nowhere else did one group exert such great control over most aspects of their workers lives as slaveowners and overseers had over the daily routines of their black slaves.
>
> Most slaves on plantations or farms lived in a well-defined area known as the quarters. Here was a setting ideal for the spread of disease. At the slave quarters, sneezing, coughing, or contact with improperly washed eating utensils and personal belongings promoted transmission of disease-causing micro-organisms among family members. Poor ventilation, lack of sufficient windows for sunshine, and damp earthen floors added to the problem by aiding the growth of fungus and bacteria on food, clothing, floors, and utensils, and the development of worm and insect larvae. Improper personal hygiene (infrequent baths, hair-brushings, and haircuts, unwashed clothes, unclean beds) led to such nuisances as bedbugs, body lice (which also carried typhus germs), ringworm of skin and scalp, and pinworms.[34, p133]

Diabetes mellitus, a common condition estimated to occur in up to 4% of the United States population,[3] exemplifies the problems of medical care for the homeless. Diabetics need an appropriate

diet, regular injections of insulin or access to oral hypoglycemics, and monitoring of blood sugar levels. Yet, although shelters may provide adequate food, they offer no special diets. Insulin, to remain potent, must be stored and handled properly, a hard task for the homeless diabetic. Pills carried in a bottle on the person are soon ground to powder. Syringes and alcohol swabs are subject to theft, sale, or barter. Laboratory services are not found or paid for easily. Unless a consistent, organized health care program is made available and accessible, these patients face both the immediate and long-term consequences of the disease. Even if diabetic coma and death is avoided, vascular complications are likely to occur in 10 to 20 years. Stroke, chronic kidney disease, amputation of a leg, and/or blindness may leave the patient a helpless and expensive ward of the state.

High blood pressure, tuberculosis, and HIV disease, discussed below, are major clinical disorders that require consistent, long-term relationships between patients and health workers to ensure successful treatment.

High Blood Pressure

Hypertension: A Paradigm of Illness

High blood pressure, defined by consistent sphygmomanometric measurements of 140/90 mm Hg or greater, serves as a paradigm of illness among homeless adults. It is the most common chronic malady encountered in these medically underreached populations, occurring in up to 29% of those served in the National Health Care for the Homeless Program.[35] Among the homeless, hypertension may develop at younger ages, intervals of inadequate blood pressure control may be more frequent, and the availability of effective therapy less certain, than among the more advantaged. The National High Blood Pressure Education Program of the 1980s[36] has improved hypertension awareness, detection, and control, but these encouraging outcomes relate largely to nonhomeless populations.[37]

In a screening and treatment program conducted from 1984 to 1988 by staff in the Department of Community Medicine at St. Vincent's Hospital (New York), 24.4% of 5295 homeless persons

were diagnosed as hypertensive. Of these, approximately 40% were unaware of this status (ie, had no previous diagnosis) and 17% of those aware of this status had untreated or uncontrolled hypertension. Unaware/untreated percentages during the 1984 to 1988 interval in other populations (domiciled) in New York State were 23%/11%.[38]

One additional feature of hypertension epidemiology among the homeless in this program was an increased prevalence in women. Of the first 1750 men and 550 women entered, 17.4% of the men and 22.2% of the women were hypertensive; for those homeless and younger than 50 years old (about two-thirds of the group), 14.7% of women and 10.3% of men had high blood pressure. Thus, in this sample hypertension occurs earlier, affects women disproportionately, and remains underdiagnosed and undertreated.

Although diagnostic criteria for high blood pressure in the general population do not differ from hypertension in the homeless, medical decisions on treatment must be affected by the inflexibilities of homeless living. Daily choices for the homeless are dictated by what others, more affluent, have chosen to cast off, discard, or vacate. Life becomes oriented to today, right now. The way high blood pressure is managed will be with shorter intervals between pressure-monitoring visits and a greater emphasis on the *immediate* benefits of blood pressure normalcy, such as reduction in heart work.

Certain points demand emphasis. Because hypertension may develop among the homeless with unexpected frequency in younger persons, all adults encountered in medical outreach programs at shelters and drop-in centers need blood pressure readings. These are best obtained at the end of the visit, when the patient may be more relaxed. Usual cautions about appropriate arm cuff size and loosening of restrictive layers of clothing apply.

The blood pressure, if elevated, must be determined on several occasions, and several times during each occasion, to assure an accurate assessment. Multiple readings are especially important in "stressed" individuals (those with chronic/acute mental illness, present use/overuse of ethanol or illicit drugs, poorly controlled diabetes, or edema states). If "stress" is a contributor to some forms of

hypertension, then the homeless are at some undefined risk for high blood pressure beyond, and perhaps in conjunction with, genetic and cultural factors. Resolution of the stress condition may, of itself, favorably and significantly affect blood pressure for a person living on the streets and new to a drop-in center; the consistent routine, relative safety, and availability of bedspace may work to lower blood pressures recorded as elevated on the first medical evaluation.

Nonpharmacologic treatment of hypertension has a place in homeless health care.[39] Although options and opportunities for recreational exercise are limited, at least the awareness of the therapeutic advantages of prudent diet and aerobic activity should be given to patients in a shelter or outreach program. Among the various nonpharmacologic approaches to high blood pressure control, weight loss (admittedly difficult to achieve and maintain) will confer the greater benefit to the greatest number of hypertensive individuals met in a health station for the homeless.

Pharmacologic treatment[40] of high blood pressure in the homeless should include once-daily medication whenever possible. Diuretic prescriptions may be required only for those patients with volume-dependent hypertension, or with isolated systolic hypertension. Transdermal preparations may be convenient but skin reactions have limited their usefulness in shelters visited by the St. Vincent's Homeless Program staff.

Success in maintenance treatment of hypertension, as with most chronic diseases, rests on patient education and the continued emphasis on daily treatment (pharmacologic and nonpharmacologic) as well as the reduction or elimination of other cardiovascular risk factors.

Treatment Results

Analysis of antihypertensive therapy in the St. Vincent's homeless health care experience focuses on 290 persons for whom complete diagnostic and treatment data are available. Seventy-five percent of the treatment group are men, and few are Hispanic. Most are black or white. Because of the inherent difficulty in tracking health care outcomes in transient and homeless persons, we chose

arbitrarily to regard hypertension control as documentation of an acceptable blood pressure (>140/90 mm Hg) at any time after the onset of treatment.

Given the vagaries of living in the streets or at drop-in centers, many patients had blood pressure readings fluctuating between normal and abnormally high during months of observation. Nevertheless, 71.7% of the group achieved hypertension control at least at one point. Among the ethnic-racial subgroups, white and (in small numbers) Hispanic patients had blood pressure control rates of 83.3% and 70.2%, respectively, whereas blacks had a control rate of 62.7%. Although these control rates may be considered "good," the difference between black and white subgroups needs explanation. For blacks, diuretic treatment of hypertension was effective: in the diuretic alone group the control rate was 68.4%, and in the diuretic-plus other drugs group the control rate was 64.1%. Only half of blacks achieved blood pressure control with nonpharmacologic maneuvers.

In contrast, hypertensive whites prescribed nonpharmacologic treatments attained normal blood pressures in 80.8% of cases and, for those failing lifestyle interventions, pharmacologic therapy was effective in 82.4%. Recognizing racial differences in the biology of hypertension represents an advance in understanding of this common medical problem, and among the homeless our current approach to treatment includes nonpharmacologic prescriptions (weight loss, exercise as possible, alcohol avoidance) for white patients and, often, combined nonpharmacologic and pharmacologic prescriptions for black patients. In either situation a continuous and supportive interaction with a consistent health care team seems crucial for treatment success.

Tuberculosis Among Homeless Persons

Cause of Exposure

The rise of homelessness since the early 1980s and the institution of emergency shelters have resulted in the creation of crowded living conditions not seen since the era of Nineteenth Century tenements. The association between poverty, crowding, and tuberculo-

sis was known nearly a century ago. S. Adolphus Knopf, writing in 1914, made the following observations:

> We know that the housing problem is most closely allied to the tuberculosis problem. There is enough statistical evidence to show that tuberculosis is primarily a disease of congestion. This evidence is to be found in the "lung blocks" of our large cities and the cheap lodging houses, in labor camps, prisons, reformatories and schools. . . Not only in the homes of the poor but also among the homeless, who must still be poorer, bad housing conditions are responsible for most tuberculosis and its concomitant misery.[41, p1721]

Isolation of persons with active, contagious tuberculosis, combined with a general increase in the standard of living, reduced death rates from nearly 200 per 100,000 to less than 40 per 100,000 by 1945.[42] With the advent of effective therapy, rates of active tuberculosis continued to decline. However, this progress halted in 1985 and active tuberculosis has been on the increase since then, resulting in approximately 35,000 excess cases of the disease[43] (Fig. 1).

Factors Associated with Spread of Tuberculous Infection in Shelters

The burden of illness does not fall evenly on the entire population. In 1991 in the United States there were 26,283 cases of active tuberculosis, yielding an active tuberculosis case rate of 10.42 per 100,000 population at risk.[43] New York City had an active tuberculosis case rate of 50.2 per 100,000.[44] Among the homeless the New York City Department of Health estimates that there were 748 cases of active tuberculosis in 1991.[44] Assuming there were 100,000 homeless persons in the city during that period, the case rate for active tuberculosis among homeless persons would be 748 per 100,000. This is nearly 75 times the national case rate, nearly 15 times the New York City case rate, and over 3 times the rate for Central Harlem.

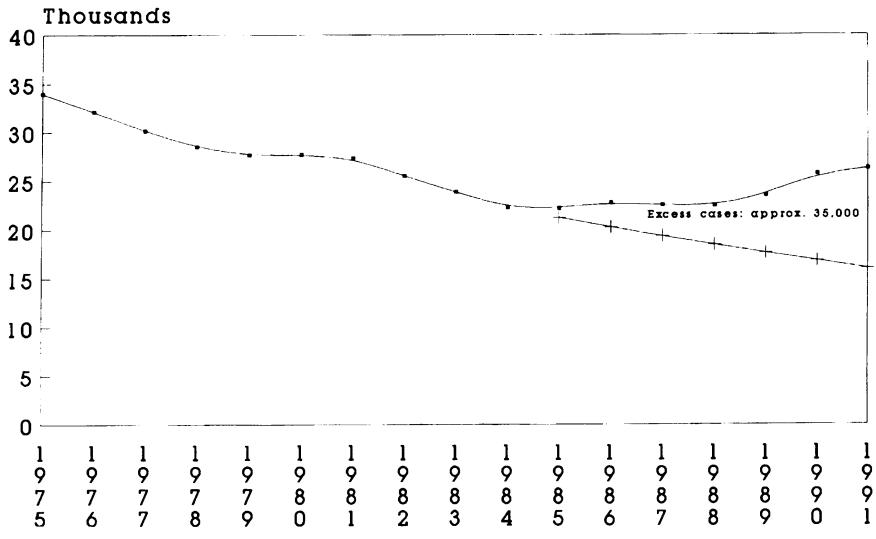

FIG. 1. Tuberculosis cases—United States, 1975–1991. *Source: MMWR* Summary of Notable Diseases, 1991.

Some have ascribed the increase to the emergence of human immunodeficiency virus type 1 (HIV-1),[45] although perhaps this is an oversimplification. The decline of affordable housing stock since the 1970s and the creation of crowded, poorly ventilated shelters for homeless persons certainly have caused the spread of tuberculosis and other airborne diseases, in part. The environment of shelters duplicates crowded living conditions not seen in 100 years, with beds in large armories laid out 1 to 2 feet apart.[46] There have been outbreaks of tuberculosis in prisons and on board United States Navy ships, both probably related to crowding and poor ventilation.[47–50] Prisoners and naval recruits are medically screened on entering these systems and they receive ongoing medical care. Most residents of large shelters receive no special entry screening, however, and the degree of medical care available varies greatly. Not surprisingly, there have been outbreaks of tuberculosis in shelters for homeless persons.[50]

One of the first was at the Pine Street Inn in Boston. Beginning in 1983, 49 persons with active tuberculosis were identified and, of these, 22 were infected with bacteria having the same pattern of isoniazid and streptomycin drug resistance. In these 22 persons,

TABLE I
RISK FACTORS FOR THE DEVELOPMENT OF ACTIVE TUBERCULOSIS AMONG PERSONS INFECTED WITH TUBERCULOSIS

Risk Factor	Estimated Increased Risk for Tuberculosis Compared With Persons With No Known Risk Factor
Acquired immunodeficiency syndrome	170.0
Human immunodeficiency virus infection	113.0
Other immunocompromising conditions*	3.6–16.0
Recentness of infection (<2 years)	15.0
Age of contact (<5 years and >60 years)	2.2–5.0

*For example, diabetes mellitus type 1, renal failure, carcinoma of head or neck, iatrogenic immunosuppression.

sputum-cultured bacteria also were of the same bacteriophage type, leaving little doubt that transmission had occurred within the shelter.[51] Similar outbreaks have been reported in a men's shelter in the Seattle area, and shelters for homeless persons in the Ohio cities of Cincinnati, Columbus, and Toledo.[46,47]

Why should this occur? Most cases of tuberculosis in the United States are believed to be the result of reactivation of a remotely acquired tuberculous infection.[52] Several conditions are known to increase the likelihood that individuals will acquire a tuberculous infection, and others which make it more likely that they subsequently develop active disease.[53] Close, prolonged, household-like contact, poor ventilation, and a particularly infectious source case, together with a susceptible host, make transmission of infection possible if not probable. Shelter residents may stay for months or longer in such settings, and length of stay has been shown to have a positive correlation with tuberculous infection.[54] Shelters are often undesirable properties, sometimes armories lined with hundreds of cots. Such buildings were not planned as residences and may not have ventilation systems designed to reduce transmission of airborne bacteria. Because of poor access to health care, homeless persons with tuberculosis will often not seek medical care until they are ill and highly contagious.[55] Late tuberculosis cases usually show cavitary disease on chest x-ray and positive sputum smears for acid-fast bacili, both associated with a high degree of contagiousness.[52]

Development of Active Tuberculosis

Factors particular to individuals will make them more likely to develop active tuberculosis from a dormant tuberculous infection (Table I).[56] Coincident HIV-1 infection is now considered the most serious risk factor.[57–62] Those co-infected with HIV-1 and *Mycobacterium tuberculosis* may develop active tuberculosis at a rate of 8% per year compared with a 10% lifetime risk for those not infected with HIV-1.[63]

Treatment of Tuberculosis in the Homeless

Treatment of active tuberculosis in persons who are homeless requires ingenuity and dedication both by the patient and the health care team. Because tubercle bacilli are spread by the airborne route, failure to cure pulmonary tuberculosis can at least result in diffusion of treatable infection to others, and at worst the spread of drug-resistant disease. In a recent study from the New York City Department of Health, previously unsuccessful treatment for tuberculosis was the most important predictor of drug resistance.[64] The traditional hospital chest clinic is probably not adequate for the task of curing tuberculosis in many patients with socioeconomic problems such as homelessness, alcohol, and/or drug dependence without additional services.[65] Directly observed therapy has been used to great advantage in clinical settings.[66] Largely because of directly observed therapy, South Carolina had an overall completion rate of 96.5% in 1991.[67] The national rate of completion of therapy was 79% in 1990.[67] In addition, on-site medical clinics in shelters can aid in helping clients remain compliant with medical regimens. One analysis from 1982 to 1988 reported a 36% cure rate with 13% still on treatment at the conclusion of the study, when treatment was provided on site. The remainder were lost due to deaths (13%) or because the patient left the shelter and was lost to follow-up by the on-site health care team (38%) and the Department of Health.[54] The percentage of patients lost to follow-up at the hospital chest clinic cited earlier was 89. Noncompliance was significantly associated with homelessness, alcoholism, and HIV disease.[65]

Key Points

These are key points regarding tuberculosis in homeless individuals:

- Tuberculous infection is a fairly common health problem in these persons nationwide (see Table II).
- Although many who enter shelters are from traditionally disadvantaged groups tending to have higher rates of infection, transmission of tuberculous infection is occurring within shelters, compounding the problem.
- As well as having high rates of tuberculous infection, homeless persons also are prone to concurrent medical conditions which can cause the infection to develop into an active state.
- Directly observed therapy and on-site medical teams can assist patients in completing treatment regimens for active tuberculous disease and infection and, in addition to curing these individuals, limit risk to the general population.

The eradication of tuberculosis will require more than prescribing the right medicines to the right persons for the right time. Even without the emergence of HIV and its ability to accelerate the progression from infection to disease, tuberculosis was bound to recur when we recreated the poor living conditions that led to its rise in the 19th Century. A major element in elimination of tuberculosis will be a marked decrease in the crowding, poverty, and barriers to health care that have promoted it. Preventive campaigns for tuberculosis must also include broad skin-testing programs, free prophylactic therapy (usually isoniazid), access to sputum collection and x-ray facilities, ultraviolet light installation, and ventilation adjustments within shelters and other congregate settings.[68–70]

Homeless Persons and HIV Disease

HIV does not discriminate. Homeless persons in urban areas are afflicted with a variety of socioeconomic ills that are linked to an increased risk of acquiring HIV disease. These include sexually transmitted disease, crack, and intravenous drug use. A significant percentage of urban homeless persons have risk factors associated

TABLE II
TUBERCULOSIS IN THE HOMELESS (1986–1993)*

	Number Screened per Year (Tuberculin Skin Tests) [Year]	Percent Returned for Reading	Percent Positive Reactions	Active Cases of Tuberculosis Found by Screening
Boston	900 [766 in 1988] including X-ray	55	41	12/3060 (>3 years)
Chicago	227 [1988]	74 (estimated)	25	0/227
Los Angeles (1)	492	84	33	3/492
Los Angeles (2)	208 [December 1992]	71	38	0/208
New York (1)	446 [1988]	90	32	12/446
New York (2)	1132 [4/92–1/93]	96	48	19/1132
Portland	1024 [1989]	76	24	4/1024
San Francisco	403 [1988]	73	23	1/403
Seattle (1)	417 [1986–1987]	80	32 (using >5 mm)	5/417
Seattle (2)	141 [February 1992]	93	37 (using >5 mm)	0/141

* ***Information provided by:*** *Boston:* Janet Groth, R.N., Public Health Nurse, Boston City Hospital, Healthlink, Boston, MA; *Chicago:* Deborah Benton, N.P., Associate Director of Health Services, Health Care for the Homeless Project, Chicago, IL; *Los Angeles (1):* Aaron Strehlow, R.N., UCLA School of Nursing, Health Center at the Union Rescue Mission, Los Angeles, CA; *Los Angeles (2):* Mitzi Krockover, M.D., Internist, The Weingart Center Medical Clinic, Los Angeles, CA; *New York (1) (2):* John M. McAdam, M.D., Attending Physician, Department of Community Medicine, St. Vincent's Hospital and Medical Center of New York, New York, NY; *Portland:* Dave Houghton, Communicable Disease Division, Multnomah County, OR; *San Francisco:* Dan Wlodarczyk, M.D., Medical Director, Health Care for the Homeless, San Francisco Department of Health, San Francisco, CA; *Seattle (1):* Stacy Kiyasu, R.N., Nursing Coordinator, Downtown Emergency Service Center, Seattle, WA; *Seattle (2):* Charles Nolan, M.D., Director, Chest Clinic, TB Control, Seattle–King County Department of Public Health, Seattle, WA.

with HIV transmission, such as injecting drug use and homosexuality. In one study, 10 to 13% of homeless persons seen at treatment sites were injecting drug users and 10% were homosexual.[57] It is also known that a diagnosis of acquired immunodeficiency disease syndrome (AIDS) can lead to homelessness secondary to loss of employment, housing, income, insurance, family, and friends. This has had a major impact on the cost of health care for persons with advanced HIV illness, who cannot care for themselves and require home care or skilled nursing for sustenance.

Epidemiology of HIV Infection Among the Homeless

The incidence and prevalence of HIV infection among the homeless is generally unknown although a few studies among particular groups of homeless persons suggest that the rates of infection are significant. Homeless persons residing in shelters often conceal their infection because of fear of discrimination by other shelter residents, security guards and other staff. Few will seek HIV antibody testing and counseling despite large public campaigns targeting populations at risk, such as injecting drug users and young sexually active men and women. In shelters for women, a large proportion of the clients may have HIV risk factors such as prostitution, injecting drug use, and crack use, yet few will self-identify because this may pose a threat to their clients, pimps, or drug suppliers.

In New York City between 5000 and 9000 AIDS patients were homeless in 1988.[58,59] This suggests an approximate 13 to 14% prevalence of AIDS in New York's homeless population. An ethnographic study of a public shelter for men on the Lower East Side of Manhattan completed in April 1989 showed that HIV transmission factors were fairly common within the shelter population.[60] Accurate analysis of such factors is difficult, however, because the raw numbers of persons at the shelter is unknown. Of the 214 shelter residents interviewed, 78 (36.4%) admitted to injecting heroin alone or in combination with cocaine. A retrospective study of 169 homeless men residing in a large shelter on Ward's Island in New York City who had sought medical care at the on-site clinic at the shelter revealed a seropositivity rate of 62%.[61] Of the men who tested HIV-seropositive, 53% were intravenous drug users, 23% were homosexual, and 8% had both risk factors. Another major study of HIV seroprevalence among homeless youth, ages 13 through 23, known to Covenant House, New York, showed that 6.7% were HIV-seropositive (Kennedy J., personal communication, 1991). Seropositivity increased with age and was more common among Hispanic runaways, who had the highest rate of 9%, followed by non-Hispanic whites (7.8%) and blacks (5.3%). A large population-based study at four community locations in San Francisco revealed

a seroprevalence of 11% among 500 homeless persons. Among these individuals, injecting drug use was reported by history in 38%, and 20% were current users.[62] Half of the latter shared needles and 35% had multiple sexual partners. Eighteen percent reported homosexual activity. In addition, many of the HIV infections were recent because, of the 209 persons who reported having had a previously negative test, 18% tested positive.[62] These data suggest that homeless persons are at a continuing risk of HIV infection because most do not have access to condoms or methods for harm reduction.

HIV Disease Prevention and Education of Homeless Persons

Lack of stable housing creates obstacles to effective HIV prevention and educational efforts to reduce risk and change lifestyle to curtail HIV transmission. Large-scale HIV antibody testing and counseling campaigns are unlikely to reach homeless persons who do not have access to traditional health care delivery systems. A variety of street outreach educational efforts have been established in Seattle, New York, Washington, Boston, and San Francisco which incorporate free distribution of condoms, harm reduction paraphernalia, safer sex brochures, and direct interaction with the homeless by health educators and peer counselors. Free needle and syringe exchange programs have been established with federal monies in Tacoma, Washington, and New York City, some under the supervision of the local health department.[71] A recently completed project from New Haven, CT indicated that needle exchange programs can effectively prevent HIV transmission among currently using addicts.[72] Projects in Vancouver, Glasgow, and the Bronx have demonstrated that needle exchange does not increase the frequency of injection or needle sharing, provides an opportunity for educating hard-to-reach drug users, and can be cost-effective.[73–75]

Education of shelter staff can also be beneficial in reducing undue fears of HIV transmission and discrimination against HIV-infected homeless persons. Training, workshops, and policies on HIV confidentiality, infection control, and universal precautions for shelter staff have been effective in the health care for the homeless

programs which conduct outreach and HIV education to shelter providers in Seattle, Boston, and San Francisco.[76]

Medical Complications of HIV Disease in the Homeless

Opportunistic infections remain the most common cause of morbidity and mortality for homeless persons with advanced HIV infection. Because many of the homeless have limited access to early intervention with antiviral and prophylactic therapies, most present with advanced infections, often requiring hospitalization.[77] Others reveal early signs of HIV disease, which may be related to factors associated with homelessness, such as malnutrition, crowded living environments, and unsanitary conditions.

Pneumocystis carinii pneumonia, bacterial pneumonia, and tuberculosis are among the most common HIV-related opportunistic infections of homeless persons. Of 30 cases of tuberculosis, 90% were among HIV-seropositive homeless men residing in a shelter in New York.[61] In a large population-based cross-sectional study of 916 subjects from public shelters and free meal lines in San Francisco 28% had positive purified protein derivative (tuberculin) (PPD) skin tests and 10% were HIV-seropositive.[79] There was significant overlap of the two infections, with 20% of those who were HIV-seropositive also skin test-positive, although the actual degree of overlap may be much higher secondary to HIV-related anergy. Persons living in public shelters had more than twice the rate of positive PPD reactivity than those living "on the streets": 32% vs 14%. More than 80% of the subjects in this study were unaware of their HIV or tuberculosis infection, and few had received medical evaluations for either problem.

Another factor that increases the recrudescence of tuberculosis among homeless persons has been noncompliance with prolonged courses of therapy, which may also lead to multidrug resistant strains of *M. tuberculosis*. In one study from New York, 42% of 33 cases of multidrug-resistant tuberculosis were homeless persons, 59% also had a history of substance abuse, and 88% were HIV-infected.[80]

Other common HIV-related infections among homeless persons include mucosal candidiasis, toxoplasmosis, syphilis, infestations, and

skin disorders. Poor oral hygiene among the homeless can lead to buccal ulcerations which can become superinfected with candidal organisms and lead to odynophagia and progressive weight loss. Peridontitis can be unusually severe in immunodeficient patients and cause loss of bone and gingiva with rapid tooth decay and erosion.

HIV-related dementia and central nervous system disorders can also afflict the homeless and be indistiguishable from conditions caused by other organic brain diseases, psychiatric illness, substance use, head trauma, and Alzheimer's disease. AIDS patients with insidious dementia may progressively lose cognitive functioning with subsequent behavior deterioration leading to loss of employment and housing. These individuals are often found wandering and disheveled in parks, subways, and on the streets and may require hospitalization for treatment of dementia and placement in health-related or skilled nursing facilities. With appropriate psychosocial supports and nursing care some may be discharged successfully to support group homes, such as Bailey House in New York City and Peter Claver House in San Francisco.

Conclusion

> The medical disorders of the homeless are all the ills to which flesh is heir, magnified by disordered living conditions, exposure to extremes of heat and cold, lack of protection from rain and snow, bizarre sleeping accommodations, and overcrowding in shelters. These factors are exacerbated by stress, psychiatric disorders, and sociopathic behavior patterns.[29, p3]

Until recently this statement was a reasonable summary. Now, however, the development of the HIV epidemic and the reappearance of tuberculosis in the United States population have changed the picture. We need to understand clearly the extent of illness in these individuals, to identify the means through which infectious disorders are spread in crowded shelters, and to learn to apply all available methods of disease control.

The challenge of delivering health-related services to homeless persons is immediate and daunting. Often and unfortunately, this challenge provides a rationale for not attempting primary care for transient populations within the United States. The fear is that if traditional methods of care delivery are inadequate or tend to fail, then nothing more can be done. This view seems unnecessarily pessimistic. It describes the challenge but not the opportunity. Prospects for homeless health care have been made bleaker, but the need more urgent, by the epidemic of HIV-associated illness and the resurgence of tuberculosis in the United States. A prudent approach would include understanding clearly the extent of illness among homeless persons, the means by which infectious diseases are spread in crowded shelters, and the ways in which available methods of disease control can be applied. Similarly, for common chronic maladies such as diabetes mellitus and hypertension, the effects of homelessness on the disease process need to be described and documented, and appropriate means for disease control must be developed and used.

Placing physicians, nurses, social workers, counselors, and outreach workers where homeless men and women gather permits the health care process to begin. Providers are recruited from primary care training programs, and undergraduate students in health-related disciplines, as well as postgraduate trainees, need to be introduced to homeless care initiatives as a valid option and adjunct to the hospital outpatient department. It has been the history of homeless health programs to begin with patient advocacy; now, if we want to be effective, we must go where we are needed and do what needs to be done.

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